

Date: Friday, 17/10/2008 7:55:56 AM
 User: Julie Dawson

Process Sheet

Customer	CU-DAR001	Dart Helicopters Services	Drawing Name	412 X-TUBE INST,LOW NARROW AFT
Job Number	42704		Part Number	D412664205TRN
Estimate Number	13211		Drawing Number	D412-664-245 REV C
P.O. Number			Project Number	N/A
This Issue	17/10/2008	S.O. No. :	Drawing Revision	C
Prsht Rev.	NC		Material	:
First Issue	/ /	Type : CROSSTUBES	Due Date	24/10/2008
Previous Run	40548		Qty:	1
Written By			Um:	Each
Checked & Approved By	SUO 08.10.17			
Comment	Est Rev:A New Issue 08-03-06 DD verified by:ec Est Rev B 08.04.02 Removed polish EC verified by: DD			

Additional Product

Job Number:



Seq. #:	Machine Or Operation:	Description:	
1.0	D6009129	Crosstube Material	
		Comment: Qty.: 1.0000 Each(s)/Unit Total : 1.0000 Each(s)	
		Pick:	
		Qty Part number Description Batch	
		1 D6009-129 Crosstube B34691	
		Check OD = 3.500"; ID = 2.250"	
2.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE	
		Comment: MORI SEIKI CNC LATHE LARGE	
		1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA690	
		2-Turn first side as per Folio FA690	
		3- File transition lines smooth.	
3.0	QC1	INSPECT ALL DIM TO DIM SHEET	
		Comment: INSPECT ALL DIM TO DIM SHEET	
4.0	MORI SEIKI	MORI SEIKI CNC LATHE LARGE	
		Comment: MORI SEIKI CNC LATHE LARGE	
		1-Turn second side as per Folio FA690	
		2- File transition lines smooth.	
		3- Remove sand and plugs	

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Date: Friday, 17/10/2008 7:55:56 AM
User: Julie Dawson

Process Sheet

Customer: CU-DAR001 Dart Helicopters Services

Drawing Name: 412 X-TUBE INST,LOW NARROW AFT

Job Number: 42704

Part Number: D412664205TRN

Job Number:



Seq. #: Machine Or Operation:

Description :

4-Scribe part # and batch # using vibrating stylus as per Dwg D412-664-245
engrave on outside of tube)

Inside of Cuff(Donot

Am 08.10.28 0

5.0 QC1

INSPECT ALL DIM TO DIM SHEET



Comment: INSPECT ALL DIM TO DIM SHEET

Am 08.10.28 0

6.0 QC8

SECOND CHECK



Comment: SECOND CHECK

So 08.10.30 (X)

7.0 HAND FINISHING1

HAND FINISHING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Chemical Conversion Coat as per QSI 005 4.1

8.0 QC3

INSPECT POWDER COAT/CHEMICAL CONVERSION



Comment: INSPECT POWDER COAT/CHEMICAL CONVERSION

RF 08.10.30

9.0 PACKAGING 1

PACKAGING RESOURCE #1



Comment: HAND FINISHING RESOURCE #1

Identify and stock in kanban rack

Location:

X-TUBE CELL

Am 8-10-30

10.0 QC21

FINAL INSPECTION/W/O RELEASE



Comment: FINAL INSPECTION/W/O RELEASE

08/10/31 (X)

Job Completion



MF 08-10-30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	42704
Description: Crosstube Assembly (412 Low Narrow Aft)	Part Number:	D412-664-245
Inspection Dwg: D412-664-245 Rev: C		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

First Article Prototype

Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	3.256	+0.005/-0.000 3.256	/			
	3.256	+0.005/-0.000 3.256	/			
	3.134	+0.005/-0.000 3.137	/			
	2.994	+0.005/-0.000 2.995	/			
	2.855	+0.005/-0.000 2.860	/			
	2.726	+0.005/-0.000 2.731	/			
	2.612	+0.005/-0.000 2.612	/			
	2.612	+0.005/-0.000 2.612	/			
	2.612	+0.005/-0.000 2.612	/			
SIDE B	3.256	+0.005/-0.000 3.256	/			
	3.256	+0.005/-0.000 3.256	/			
	3.134	+0.005/-0.000 3.137	/			
	2.994	+0.005/-0.000 2.997	/			
	2.855	+0.005/-0.000 2.860	/			
	2.726	+0.005/-0.000 2.731	/			
	2.612	+0.005/-0.000 2.612	/			
	2.612	+0.005/-0.000 2.612	/			
	2.612	+0.005/-0.000 2.612	/			
	123.59	+/-0.020 123.610	/			

Measured by:	A. m	Audited by:		Prototype Approval:	N/A
Date:	08.10.28	Date:	08/10/30	Date:	N/A

Rev	Date	Change	Revised by	Approved
A	08.07.03	New Issue (P/O D412-664-205)	KJ/DD	

DART

DESIGN	DRAWN BY	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED	APPROVED	DRAWING NO.	REV. C
		D412-664-245	SHEET 1 OF 3
DATE		TITLE	
07.03.29		CROSSTUBE ASS'Y (412 LOW-N AFT) NTS	
A	06.12.01	NEW ISSUE	
B	07.03.01	CHG CUFF AREA, CHG RUBBER CUSHION	
C	07.03.29	CHG RIVET AND RUBBER CUSHION	

RELEASED

07.04.24

PARTS LIST:

Qty	Part Number	Description
X	D412-664-245	CROSSTUBE ASSEMBLY (412 LOW-NARROW AFT)
1	D6009-129	CROSSTUBE
2	D2856-600-1009	ABRASION STRIP
1	D2896-1	SUPPORT
2	D3189-1	CHAFING SHIELD
2	D3595-063-570	RUBBER CUSHION
2	D3606-1	CUFF
44	CR3212-4-07	RIVET (OR M7885/3-4-07)
4	MS21920-28	CLAMP
2	MS21920-30	CLAMP (OR MS21920-32)
A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
A/R	SIKAFLEX-241-291	SEALANT (OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT)

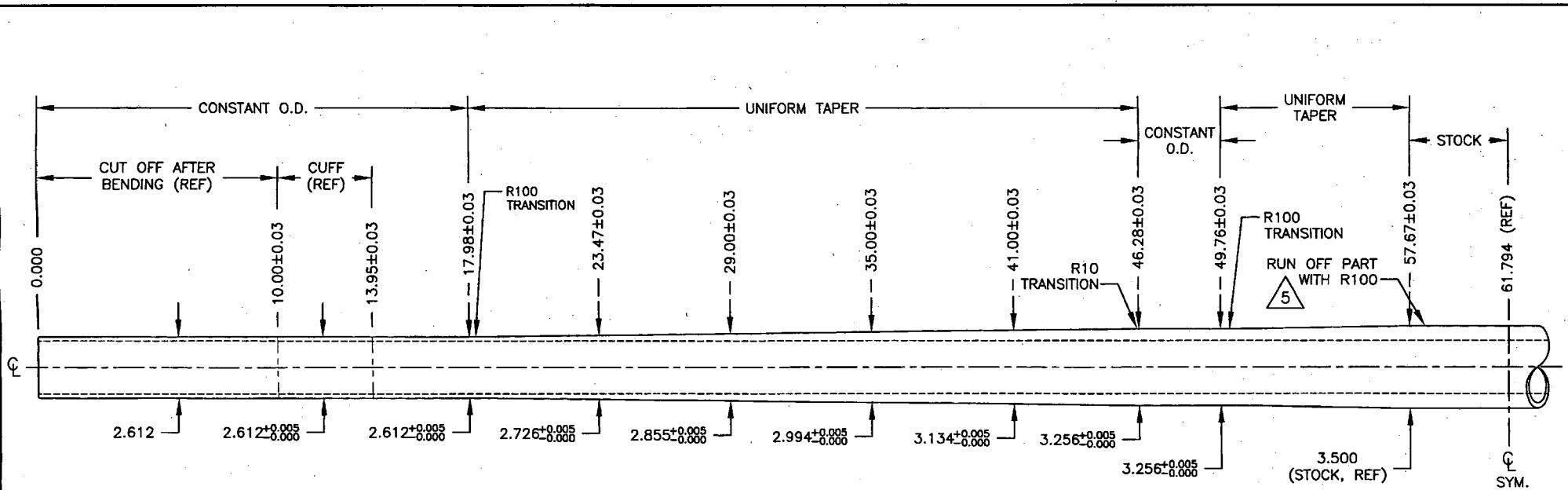
GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 2) MATERIAL: MANUFACTURED FROM D6009-129
FINISHED LENGTH = 123.59 ± 0.020 (BEFORE BENDING/TRIMMING)
- 3) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART 005 4.2
- 4) PART IS SYMMETRIC ABOUT CENTERLINE.
- 5) RUN-OFF PART, BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 6) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D., EXCEPT UP TO 10% IS ALLOWED IN AREA NOTED.
- 7) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 8) SCRIBE DART PART NUMBER AND BATCH NUMBER IN THIS AREA WITH VIBRATING STYLUS.
- 9) INSTALL D2856-600-1009 ABRASION STRIP WITH A 0.13 (REF) GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.
- 10) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 11) APPLY A 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 12) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE CROSSTUBE SUPPORT.
- 13) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY NUT AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.
- 14) INSTALL D3606-1 CUFF AFTER CHEMICAL CONVERSION COAT BUT BEFORE PAINT, WITH A LAYER OF SIKAFLEX-241-291 OR PROSEAL 890 OR MIL-S-8802 CLASS B2 SEALANT BETWEEN CUFF AND CROSSTUBE. SEAL EDGE OF CUFF TO ENSURE NO GAPS.
- 15) TOUCH-UP HOLES WITH CHEMICAL CONVERSION COAT.

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D412-664-245 MACHINING DETAIL

RELEASED

07.04.19


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DESIGN	DRAWN BY	DART	DART AEROSPACE LTD. HAWKESBURY, ONTARIO, CANADA
CHECKED	APPROVED	DRAWING NO. D412-664-245	
DATE	07.03.29	SCALE 1:1	
TITLE CROSSTUBE (412 LOW-NARROW AFT)			